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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/840,167

05/06/2004

Nicolai Kosche

188377/US/2

7505

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7590

07/16/2009

DORSEY & Whitney LLP
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EXAMINER

VO, TED T

ART UNIT

PAPER NUMBER

2191

MAIL DATE

DELIVERY MODE

07/16/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/840,167	Applicant(s) KOSCHE ET AL.	
	Examiner TED T. VO	Art Unit 2191	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 May 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-52 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-52 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This action is in response to the amendment filed on 05/04/2009.

Claims 1-52 are pending.

Response to Arguments

2. This is in response to the applicants' argument remarks filed on 05/04/2009. The amendment necessitates a new ground of rejection presenting in this action. The arguments are moot.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

A person shall be entitled to a patent unless –

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. Claim 1-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Pat. No. 7,103,877 B1 to Arnold, in view of Whaley, "A Portable Sampling-Based Profiler for Java Virtual Machines", 2000, ACM, pages 78-87.

As per claim 1: Whaley discloses, *A tangible storage medium having computer readable program code that for performing data profiling by* (see the sampling profiler) :

tagging instruction (Refer to Sampling profiler, node annotations with profiler), *that may accrue time based on loading of data, with identifiers that describe the instruction instances with source-level data object language constructs* (Refer to Java Thread);

Figure 3, using Sampling profiler, profile Data. See sec. 5.2, p. 83, and more specifically, the act of annotation nodes with profile counter (see p. 83, left col.)

identifying an instruction instance of the tagged instruction instances that corresponds to a runtime event detected in execution of code that includes the identified instruction instance; (see Figure 3, using the sampling profiler to sample the Java thread, e.g. see sec. 5.4.1, incorporated with figure 3, for identifying where to place profiler data point (sec. 5.4.1 in p. 84)).

attributing the runtime event detected to source-level data objects describing units of data identifiable in source code, wherein the attributing is based at least in part on a predefined association (such as profile data seen in Figure 3, or sampling-based/instrumentation-based) *between the identified instruction instance in executable code and the source-level data object language construct corresponding thereto*. See Figure 3, and section 5.2 (p. 83) as constructing profiling algorithm to produce compiler out put

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resulting from sampling, with different aspect such as buffering, stack frame, overflow, cache misses (see throughout the reference) .

Whaley is in general to discuss the identifying the profiling at instruction nodes, edges, branches, target code, threads (p. 79). It does not specific with “an instruction instance”,

However Arnold is specific in placing profile data at instruction instance (See Arnold: Abstract). It is so common in the profiling that for identifying the instruction instance because it is a point of interests in profiling, where Both Whaley and Arnold are reasonable for combining as being inherent in term of using terminologies since they address the same sampling profiling technique, but express different in the terms (note: under MPEP 2131.01 multiple reference is reasonable)

Therefore, it is obvious to an ordinary in the art to combine the teachings where with the combining the Arnold, it would modify the profile data point within Java thread of Whaley into instruction instance since the call methods (i.e. instruction instance) are common points of interest in profiling.

As per claim 2: Regarding, *(Previously Presented) The tangible storage medium having computer readable program code of claim 1 wherein the runtime events include sampled runtime events that statistically represent the runtime events.*

(Whaley: see Introduction)

As per claim 3: Regarding, *The tangible storage medium having computer readable program code of claim 2 wherein the sampled runtime events include one or more of cache misses, cache references, data translation buffer misses, data translation buffer references, traps, and an event counter condition.*

(Whaley: see p.80, left col.)

As per claim 4: Regarding, *The tangible storage medium having computer readable program code of claim 3 wherein the event counter condition includes counter underflow or counter overflow.*

(Whaley: see p.83, within sec. 5.2)

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As per claim 5: Regarding, *The tangible storage medium having computer readable program code of claim 1 wherein the software tool includes a profiler, compiler, assembler, interpreter, or virtual machine.*

(Whaley: see Figure 3)

As per claim 6: Regarding, *The tangible storage medium having computer readable program code of claim 5 wherein the interpreter includes a byte-code interpreter.*

(Whaley: see Figure 3, note: the title of this reference relates to a Profiler for JVM)

As per claim 7: Regarding, *The tangible storage medium having computer readable program code of claim 5 wherein the compiler includes one or more of an optimizing compiler and a byte code compiler.*

(Whaley: see Figure 3)

As per claim 8: Regarding, *The tangible storage medium having computer readable program code of claim 1 wherein the predefined association is included within one or more of a compiler generated code, assembler generated code, an image, and an associated separate encoding.*

(Whaley: see Figure 3, and see p. 79, sec. 2.1.1)

As per claim 9: Regarding, *The tangible storage medium having computer readable program code of claim 1 wherein the instruction instance includes one or more of an instance of an instruction from a processor instruction set, an instance of an operation corresponding to a processor instruction set, an instance of a virtual machine instruction, or an instance of a byte code.*

(Whaley: refer to nodes, Edges, thread, such as seen in sec. 4.1, start at p. 81, or further see Arnold: Col. 3:10, "a yield point is defined as a special sequence of instructions (instruction instance) Col. 3: 17, The compiler inserts yield points (compiler generated code) Col. 3: 35-36, placement of yield points in all method prologues and at the targets of all backwards intra-procedural branches... Col. 3: 40, take different sampling actions when a yield point is taken (corresponding instruction)

As per claim 10: Regarding, *The tangible storage medium having computer readable program code of claim 1 wherein the executable code includes one or more of object code, byte code, and machine code.*

(Whaley: see Figure 3, Arnold: Col. 3: 2, "compiled binary program")

As per claim 11: Regarding, *The tangible storage medium having computer readable program code of claim 1 wherein the source-level data object language construct representation includes one or more of a class, a data type, a data size, a data type definition, a data structure, linked object,, and a member of a data structure, static variables, automatic variables, memory segment.*

(Whaley: see Figure 3, Arnold: Col. 3: 36, method prologue (source level data object language construct)

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As per claim 12: Regarding, *The tangible storage medium having computer readable program code of claim 1 wherein the corresponding language of the language construct includes a source-level language or an intermediate level language.*

(Whaley: see Figure 3, the PCCT)

As per claim 13: Regarding, *The tangible storage medium having computer readable program code of claim 1 further comprising the software tool aggregating runtime events based on the source-level data objects.*

(Whaley: see Figure 3, and see sec. Introduction)

As per claim 14: Regarding, *The tangible storage medium having computer readable program code of claim 13 that also displays aggregated runtime events.*

(Whaley: see Figure 3, and see sec. Introduction)

As per claim 15: Regarding, *The tangible storage medium having computer readable program code of claim 1 that also aggregates profile data for the code based on the source-level data object language construct representation.*

(Whaley: see Figure 3, and see sec. Introduction)

As per claims 16-25: See rejections and rationales addressed in the claims 1-15 above.

As per claims 26-39: See rejections and rationales addressed in the claims 1-15 above; especially:

With regards to claims 26-28, see the rejection of claims 1, 10, 11 above.

With regards to claim 29, further see Arnold, col. 4:17-40, counter base approach, etc. See sample code load value to yield point counter.

With regards to claim 30, further see Arnold, col. 4:17-40, counter base approach, etc. See sample code.

With regards to claim 31, further see Arnold, col. 4:17-40, counter base approach, etc. See sample code.

With regards to claims 32, 33, see the rejection of claims 3 and 12 above.

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With regards to claim 34, The method of claim 33 wherein cache miss includes a data cache miss, an instruction cache miss, a unified cache miss, and an external cache miss., see Whaley, sec. 2.1.2, p. 80.

With regards to claim 35, The method of claim 33 wherein cache references includes one or more of a data cache reference, an instruction cache reference, a unified cache reference, and an external cache reference., see Whaley, sec. 2.1.2, p. 80.

With regard to Claim 36, The method of claim 33 wherein the counter condition event includes a counter overflow event or a counter underflow event., see Whaley, sec. 2.1.1, start p. 79.

With regard to Claim 37, The method of claim 26 further comprising backtracking from a second instruction instance to the instruction instance after detecting the sampled runtime event., See Whaley, as the structure definition of the call tree in p. 84.

With regard to Claim 38, The method of claim 26 embodied in a computer program product encoded on one or more tangible storage machine-readable media. See claim 1.

With regards to claim 39, The method of claim 26 further comprising aggregating profile data., see Whaley figure 3.

As per claims 40-45: see the rejections of claims 1-15 above.

As per claims 46-48: see the rejections of claims 1-15 above.

As per claims 49-52: see the rejections of claims 1-15 above.

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ted T. Vo whose telephone number is (571) 272-3706. The examiner can normally be reached on 8:00AM to 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wei Y. Zhen can be reached on (571) 272-3708.

The facsimile number for the organization where this application or proceeding is assigned is the Central Facsimile number **571-273-8300**.

Any inquiry of a general nature or relating to the status of this application should be directed to the TC 2100 Group receptionist: 571-272-2100. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TTV
July 6, 2009

/Ted T. Vo/
Primary Examiner, Art Unit 2191